



# **GENERAL ELECTRIC** **HOME WIRING**

**A MODERN WIRING METHOD FOR ALL TYPES  
OF RESIDENCES AND SMALL BUILDINGS**



**INCLUDING A CATALOG OF G-E MATERIALS SUITABLE FOR  
COMMERCIAL AND INDUSTRIAL AS WELL AS RESIDENTIAL WIRING**

# GENERAL ELECTRIC HOME WIRING MEETS THE MODERN NEED

*for*

*Efficient Wiring in Homes  
and Small Buildings*

G-E Home Wiring is designed to provide enough copper and outlets for all modern conveniences. It can be installed in many different ways. Each circuit of the system is independent with local control. Long circuit runs are avoided. Heavy risers terminate at conveniently located branch distribution units, from which final branch circuits are divided into separate runs. Economies are effected and the overloading of circuits is prevented. This method of wiring is not expensive in comparison with conventional wiring done adequately.

## WHY GOOD WIRING IS ESSENTIAL

**AMPLE COPPER AND PROPER LAYOUT** Much has been said and written about the need for outlets, but very little attention has been paid to wire sizes or to efficient layout design. Yet these two factors are even more important than an ample number of outlets. For of what use is an outlet if current can't get through to it without losses?

G-E Home Wiring furnishes enough outlets and ample copper. The slight additional cost of these ample copper conductors is returned many times over by the saving of two distinct losses—loss in heat and loss in power. Such losses are continuous and must be paid for as registered on the meter.

**APPLIANCES NEED FULL VOLTAGE** The growing use of electrical appliances has made evident another loss not recognized before. This loss is far greater than the first two. Electrical appliances of all types are very efficient, of course, when used on electrical distribution systems that supply them with a sufficient amount of electricity at the pressure for which they were designed. If electricity is not supplied under these conditions, the appliances cannot do the work for which they were intended. They can work only as fast as, and at the rate at which they can obtain power. The ap-

pliances have not lost their high efficiency but they are unable to obtain enough power to do the work required of them in the time for which they were designed. In fact, in some cases, they cannot do the work at all, or not to the full extent of their capacity.

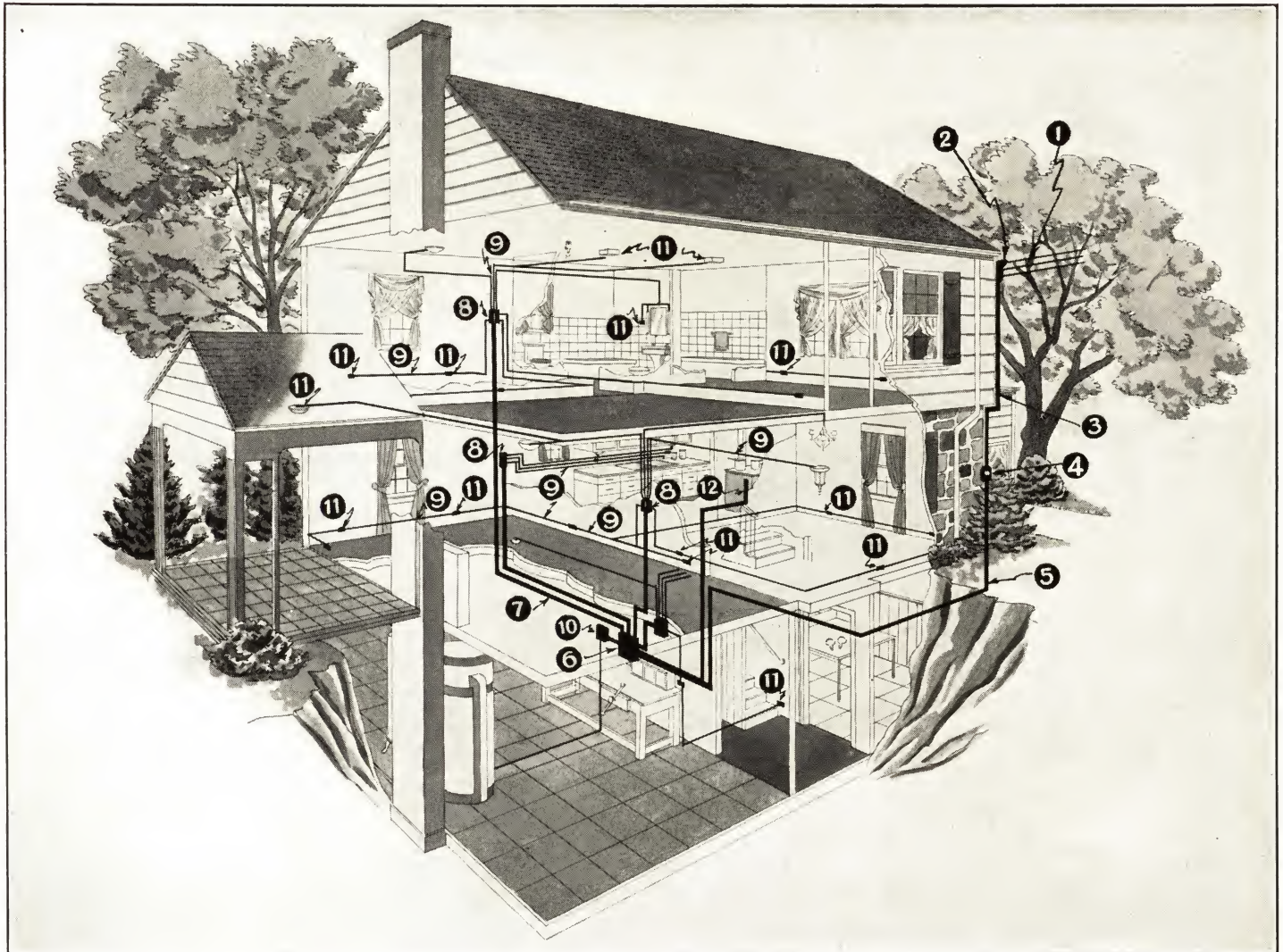
To the extent that the pressure supplied to the appliance is reduced, the time required to do the work expected from the appliance is increased. During this additional time, the appliance is continuing to use power which must be paid for. The electrical bill is increased because electricity is purchased on a time basis, that is, electricity is measured and paid for on the basis of the kilowatt-hour—or the power times the time.

**G-E HOME WIRING SUPPLIES ALL NEEDS** It is apparent, then, that the attempt to save money on the size of the conductors throughout the electrical system will not be an economy, but will be foolhardy and will result in losses that will be constant throughout the life of the system. Upon consideration, it will be seen that a proper layout of the wiring system is without doubt the most important requisite in any home. G-E Home Wiring provides this proper layout, with ample copper and outlets, and with convenient control of circuits.



## HOW G-E HOME WIRING MEETS MODERN NEEDS

1. Main Distribution Conductors and their Control Units are adequate to supply the power required according to the National Electrical Code rules.
2. Large sub-feeder conductors run from the main distribution control unit to conveniently located points in the home, where they terminate at individual control units which protect and control the final circuits.
3. Final circuits are divided in several short radial runs, each serving a few outlets. Note that circuits serving lighting fixtures are different from those serving convenience outlets.



1. SERVICE. Conductors from Utility high line to House.....Page 6
2. SERVICE FITTINGS. Joins service conductors and main feeders together .....Page 6
3. SERVICE ENTRANCE. Cable or rubber-covered conductors in conduit from service head to main distribution unit .....Page 6
4. OUTDOOR METER. Installed in accord with local utility.....Page 7
5. MAIN FEEDERS. Should be of sufficient size. See No. 3 above.....Page 7
6. MAIN DISTRIBUTION UNIT. Of proper size for total connected load. Shall contain main fuses or breakers, range fuses or breakers and protective devices for other fixed equipment. See local utility about type.....Page 7
7. SUB-FEEDERS. At least one size larger than final circuit conductors.....Page 7
8. BRANCH DISTRIBUTION UNITS. Locate near load centers. May be fuses or circuit breakers but device should be same type as used in main distribution unit. Controls all final branch circuits .....Page 10
9. FINAL CIRCUITS. Recommended that circuit be divided into several short sub-circuits which radiate from control units—each sub-circuit to serve only a few outlets.....Page 10
10. BOXES AND FITTINGS. Shall be furnished as needed.....Page 11
11. OUTLETS. Should conform to modern standards of adequacy.....Page 11
12. RANGE WIRING. Heavy enough to permit full-load operation of range. See local rules for installation..Page 16





## ADVANTAGES OF G-E HOME WIRING

G-E Home Wiring helps assure electrical comfort and convenience to the home owner now and in the future. It is complete, adequate and efficient.

**Convenience**—Enough outlets are provided so that lights and appliances can be used when and where they will be most useful. Ample wire sizes and proper layout design assure current being delivered at the outlets at full voltage. There is no waiting for pokey appliances to do their work.

**Comfort**—Lights burn brightly at their full rated voltage. There is no dimming and flickering of lights when appliances start to operate. Properly placed switches provide a pathway of light throughout the home without retracing steps.

**Easy circuit Control**—Control units are placed at convenient, centrally located points about the home. This is possible because heavy feeders terminate at these points.

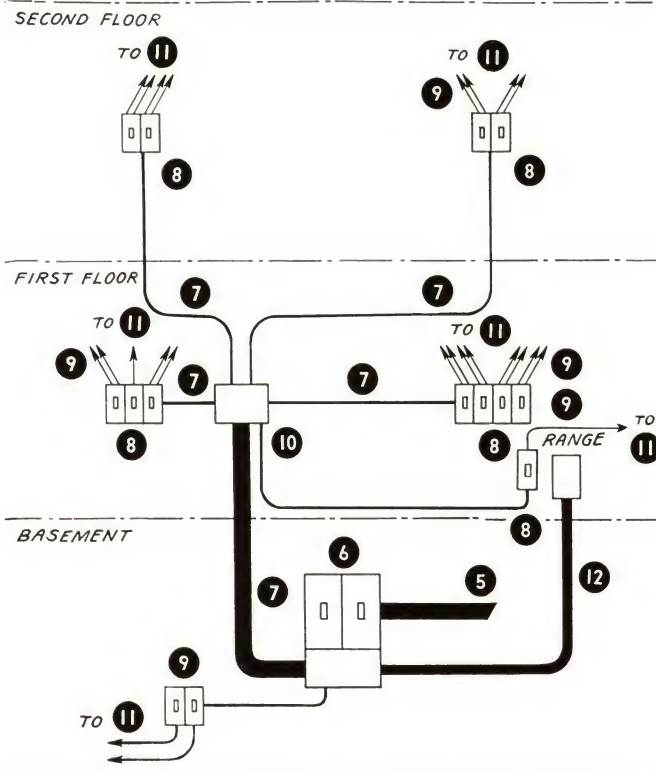
Final circuits start here. If overloads or short circuits occur, it is only necessary to walk a few steps to restore service instead of making a trip to the basement as would be necessary with conventional wiring.

**Efficiency**—Proper wire sizes, short runs and radial circuits make G-E Home Wiring highly efficient. There is practically no voltage drop. An appliance operating at one outlet does not affect the operation of appliances at other outlets. Lights and appliances operate at their rated voltage.

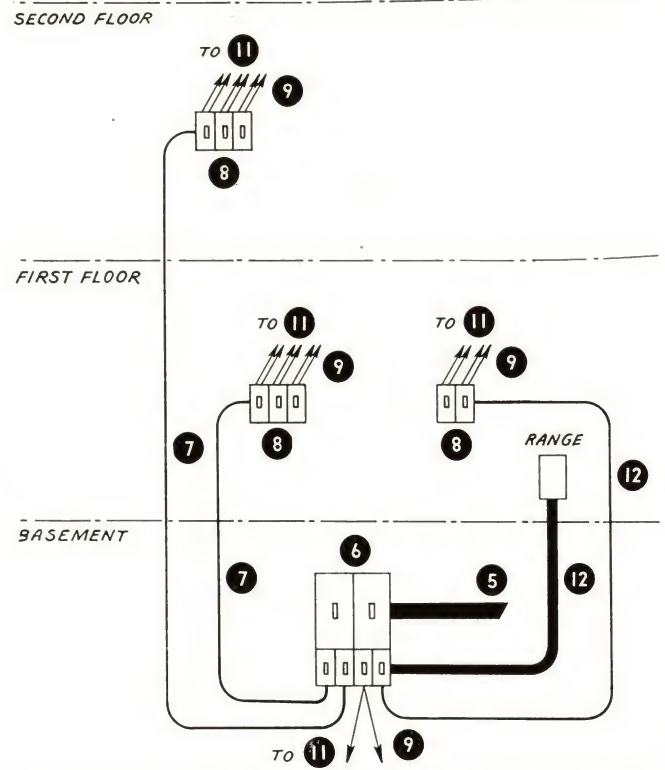
**Economy**—G-E Home Wiring helps save money in two ways: (1) expensive additional wiring will not be necessary in the future; (2) voltage losses are avoided. The voltage drop in the wires running to the outlets in a conventional wiring system causes considerable loss of efficiency in lights and appliances. These losses, of course, make the operation of appliances more expensive.

## ... G-E Home Wiring

**CASE 3**—A combination of the methods in the first two layouts is employed here. A single feeder of the same size as the service entrance cable is run to a central point on the first floor. From there, smaller feeders are installed, in accordance with Section 2434d of the N.E.C., 1937 Edition, which serve branch load centers on the first and second floors.



**CASE 4**—Here, the feeders are protected in the main distribution unit. This method permits feeder sizes which are not limited in length or number of protective devices served by them. The protective devices for the feeders must, of course, have a rating high enough for the load which is served by them. Probable diversity factor may be taken into consideration.



The numbers in diagrams refer to explanatory listing on page 3 and to product sections in this catalog



# G-E Wiring Material for Home Wiring Installations

(Also for Industrial and Commercial Installations)

## 1 SERVICE

Materials used in the Electrical Service from the pole to the house are, of course, selected and installed by the local utility company. For G-E Wire and Cable available, see Sections No. 3 and No. 7.

## 2 SERVICE FITTINGS

See Section No. 10, Boxes and Fittings.

## 3 SERVICE ENTRANCE

Listed here are G-E cables and materials suitable for Service Entrance requirements and for use as Main Feeder Conductors, whatever type of installation you wish to specify.

**Rigid Conduit**—The accepted standard of protection for cables and conductors. It is used both on underground service entrance installations and on overhead installations from "point of attachment" (on the building) to meter and distribution center.



**G-E White Rigid Conduit** is thick-walled steel tubing, galvanized and Glyptal-coated inside and out, which can be connected at all points with threaded fittings.



**G-E Black Rigid Conduit** is heavy-wall steel tubing coated inside and out with a corrosion-resistant, elastic, black enamel.



**G-E Electrical Metallic Tubing** is light and easy to bend and requires no threading. Approved by Underwriters' Laboratories for both exposed and concealed work, except in cinder fill.



**G-E Service Drop Cable, Type SD**—For "Tamper-proof" overhead service entrance from pole to building. Available in 3-conductor assemblies, consisting of two insulated conductors, and a

stranded concentric bare neutral conductor; and in 2-conductor assemblies, consisting of one rubber-covered wire and a stranded concentric bare conductor. Both are enclosed in waterproof tape and braid. Sizes: No. 10 AWG up to and including No. 2 AWG.

**G-E Service Entrance Cable**—"Tamper-proof," for use from point of attachment of Service Drop Cable at building to the distribution center.



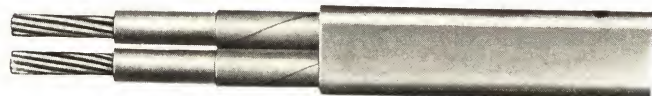
**Type SE, Style U**—consists of one or more insulated conductors and a stranded concentric neutral conductor enclosed in a watertight, weatherproof covering. On short spans, it may be used from pole through to distribution center.



**Type SE, Style A**—Concentric Type (formerly A.E.I.C.) is a cable consisting of one or more rubber-covered conductors and a concentrically applied stranded bare conductor, protected by galvanized strip armor and a heavy watertight, weatherproof covering. Used when rigid conduit is not required.

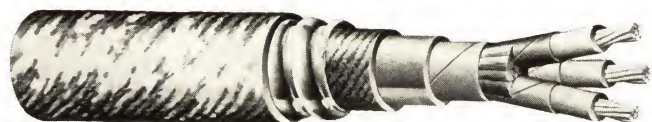


**G-E V. C. Line Wire**—For overhead use from pole to building where individual conductors are required. Consists of a solid or stranded conductor, covered with two or more wrappings of varnished cambric and an overall heavy cotton braid treated with U.R.C. compound, making it weatherproof.



**G-E 600-volt Leaded Cable**—For underground use in rigid conduit. It consists of solid and stranded conductors insulated with rubber and enclosed in a lead sheath for moisture protection.

**G-E Moisture-resisting Grade Building Wire**—Insulated with a moisture-resisting compound. Can be used in lieu of leaded cable where specified in Article 300, Section 3035, National Electrical Code.



**G-E Parkway Cable**—For underground use without rigid conduit. Made in four types designed to meet varying conditions of



dampness and possibilities of mechanical injury which might occur either during installation or because of heavy trucking, plowing, spading, settling of the soil, etc., after the cable has been laid. The four types include:

(1) **RJ**—An economical lightweight cable, protected against moisture and mechanical injury by multiple layers of asphalt-impregnated fabric, tape and jute wrappings.

(2) **RLJ**—An inexpensive cable, protected against moisture by a lead sheath, with asphalt-impregnated jute wrappings. Not to be used where there is danger of mechanical injury.

(3) **RLJIJ**—A superior cable sheathed with lead, then with an impregnated jute cushion, over which is BX interlocking armor which in turn is enclosed in an asphalt-impregnated jute wrapping.

(4) **RLJFJ**—Extremely resistant to mechanical injury and moisture, consisting of a lead sheath over the insulated conductors, with a double wrap of flat steel tape and asphalt-impregnated jute coverings.

#### 4 METER

G-E Watthour Meter, outdoor or indoor type.

#### 5 MAIN FEEDER CONDUCTORS

See Section No. 3, Service Entrance. G-E Cables suitable for use as Main Feeder Conductors are described in the foregoing section.

##### Specifications: Service Entrance



All service entrance materials: Shall comply with requirements of local utility company. Unless contrary to regulations the following types shall be used. Overhead Entrance, pole to building and between buildings: G-E Service Drop Cable or Weatherproof Wire. Building Entrance to distribution center: G-E Service Entrance Cable or Code Wire in G-E White Rigid Conduit. Underground Entrances, pole to distribution center: G-E 600-volt Lead-sheathed cable or G-E Moisture-resisting grade wire in G-E White Rigid Conduit, except where local regulations permit use of G-E Parkway Cable of type adapted to subsoil and installation conditions. Meter: G-E Watthour Meter, outdoor or indoor type.

#### 6 MAIN DISTRIBUTION UNIT

Materials available include the following:



Trumbull Multi-breaker, surface type; available also for flush mounting.

*Multi-breaker Load and Service Centers* are furnished in boxes of two sizes (for installation in shallow partition:)

1 to 8 Poles: 6 $\frac{5}{8}$  in. wide, 3 $\frac{9}{16}$  in. deep, 11 $\frac{1}{8}$  in. long.

9 to 16 Poles: 12 $\frac{1}{8}$  in. wide, 4 $\frac{1}{16}$  in. deep, 13 $\frac{1}{8}$  in. long.

Mains are of 70-ampere capacity arranged for 3-wire 115/230, or 2-wire 115 volts, solid neutral a-c service. Branch Circuit Breakers are single-pole in 15-, 20-, 25-, 35-, and 50-ampere capacities to match commercial wire sizes. Mechanically connected handles serve where 3-wire, ground-neutral, 115/230-volt service is required.

Multi-breakers are supplied in code-gauge steel enclosures with ample knockouts. Flush (gray), Surface (black) covers.

*Trumbull Fuse Puller Switches* are available as follows:

**Fuse-Puller Switches:**  
100-amp.; 60- and 100-amp.; and 30-, 60-, 100-amp. combinations — 3-pole — solid-neutral — 2 cartridge fuses — 125-250 volts, a.c.

**Branch Circuits:** (1-8 incl.) 30-amp. — solid-neutral — single-fusing (plug) — 125 volts.



Trumbull Fuse Puller Switch, Surface Type; also available for flush mounting.

1. The ampere unit is designed for use singly or in combination with the 30- and 60-ampere units, including plug-fuse branch circuits if desired.

2. The base is heavy porcelain. The fuse cap is bakelite.

3. To open switch, pull cover out by handle.

4. Fuse switch covers have "on" and "off" positions and are indicating.

5. Shields are removable without removing screws.

6. 30-ampere NEC fuse puller is usually used for water-heater circuits, but a water-heater or other circuit at 230 volts may be connected to any pair of branch plug-fuse terminals of opposite polarity.

7. Box finish—Surface mounting: black enamel.

Flush mounting: galvanized steel box; gray lacquer fronts.

8. Can be furnished with service channel twistout in top end (3 in. wide, 1 in. deep) upon request.

##### Specifications: Main Distribution Unit 6

The main distribution unit shall be of the proper size for the total connected load. It shall contain the main fuse or breakers, the range fuses or breakers (as desired), and the protective devices for the other fixed equipment in the basement. In all cases, the local utility shall be consulted in regard to type and meter sequence, etc., before the main distribution unit is installed.

#### 7 SUB-FEEDER CONDUCTORS AND RACEWAYS

##### Conductors



**G-E Rubber Insulated Wire and Cable** is made in three standard grades of insulation, all with flame-retarding finish which will not support combustion and protects against moisture.

(a) Code Grade meets the requirements of National Electrical Code. The rubber insulation is black.

(b) Intermediate Grade has red rubber insulation of superior electrical and physical characteristics.

(c) 30% Performance Grade has green rubber insulation and will meet Code requirements after passing the oxygen bomb test—equivalent to 10 years of natural aging.



**G-E Performite Wire and Cable** is insulated with a long-life, super-aging compound containing not less than 35% of new rubber by weight. Recommended for extremely important circuits where uninterrupted operation is absolutely essential. Meets all requirements of Federal Specifications JC-106.

**G-E Deltabeston Wires and Cables** are made in a complete line of all-asbestos and part-asbestos insulations and in single or multiple conductors, for high-temperature work (120° F or higher) where rubber deteriorates rapidly, such as switchboards, stoves and ranges, motion picture machine, arc lamp cables, etc.

G-E Wires and Cables are made for many special purposes, including fixture wires and telephone wires. Their use is governed by standards of the N.E.C. for the particular condition.

### Armored and Non-Metallic Sheathed Cables

These are wiring materials embodying protection against mechanical injury which are used when a conduit or other raceway is not employed. Primarily used for wiring in wood construction for ease and economy, and for minor alterations and branch circuit extensions in other buildings where the use of raceways is not practical.



**G-E BX Armored Cable** consists of one or more standard rubber-covered wires with a moisture-proofed wrapping covered by a flexible interlocking steel strip armor. Regularly made with "Code" Grade rubber insulation, but available on order in "Intermediate" and "30% Performance" Grades. Oval BX also available.

**G-E BXL Lead-sheathed Armored Cable** consists of rubber insulated conductors in a braided wax-saturated cotton jacket, sheathed in lead, and covered with BX type steel strip armor. Used in damp locations where BX is not suitable.



**G-E BraidX Non-metallic Sheathed Cable** consists of two or more rubber insulated conductors in a special protective covering having high resistance to mechanical injury. When required, G-E BraidX will be supplied containing an additional non-insulated copper conductor for bonding purposes.

### Conduits and Raceways

Primarily used to provide mechanical protection for conductors, they have other special advantages. Wiring is done after the structure is completed, avoiding injury to the circuits during construction. Existing circuits may be withdrawn for repair or replacement, and new circuits can be installed, without other alterations. They are required in all fireproof buildings. Advantages for non-fireproof structures are obvious.



**G-E White Rigid Conduit** is the accepted standard raceway for use where conductors are buried in concrete or masonry, and for

exposed wiring where maximum mechanical protection is required. It is thick-walled steel tubing, hot dipped galvanized and Glyptal-coated inside and out—connected with threaded fittings at all joints to prevent leakage. It also acts as an induction shield preventing interference, and provides an effective means of grounding.



**G-E Black Rigid Conduit.** This is heavy-wall steel tubing coated inside and out with a corrosion-proof elastic black enamel.



**G-E Electrical Metallic Tubing.** A thin-walled electro-galvanized steel raceway, provided with compression couplings, does not offer the same degree of protection as rigid conduit, but otherwise performs the same function. Subject to N.E.C. restrictions.

**G-E Underfloor Fiberduct.** A complete system of underfloor wiring is fully described on page 19.



**G-E Galvanized Flexible Metal Conduit** consists of interlocking flexible galvanized steel armor in sizes  $\frac{1}{8}$ " to 3" I.D. It is used where construction requires a flexible conduit in a rigid raceway system, and to provide couplings for adjustable equipment, where conduits are required for temporary wiring, etc. Not approved for exterior work or for hazardous locations.

### Specifications:

#### Sub-feeder Conductors

7

All conductors: G-E Rubber-covered Wire, Flame-retarding and Moisture-resisting Finish, unless otherwise noted.

In fireproof buildings, new work: Conductors should be run in G-E White Rigid Conduit.

In non-fireproof buildings, new work: Unless otherwise shown on drawings, all sub-feeders and branch power circuits and branch sub-circuits should be BraidX or BX in dry locations or BXL in damp locations. Where conduit is shown on drawings, it should be G-E White Rigid Conduit.

Sub-feeders from main distribution unit to branch distribution unit should always be of a size large enough to assure good voltage conditions at the branch distribution unit, and should be at least one size larger than the final circuit conductors.



## RECOMMENDATIONS FOR USE OF G-E RACEWAYS AND CONDUCTORS

Structural Conditions and Locations	Raceway (Use designated conductor as noted)	Conductor (Used in raceway except as noted)	Armored or Non-Metallic Sheathed Cable (Used without raceway)
FIREPROOF CONSTRUCTION			
1. General Light and Power Circuits			
Dry normal locations.	G-E Rigid Conduit required throughout except as here noted with G-E Flexible Conduits permitted for special conditions. G-E Fiberduct used for underfloor raceways.	G-E Rubber Insulated Conductors.	
Damp normal locations.		G-E Lead-sheathed Cables.	
High temperature locations.		G-E Deltabeston Conductors or Cables.	
*Hazardous locations.	Raceway not mandatory for under-plaster extensions. May be G-E Electrical Metallic Tubing or G-E Oval Duct as required.	G-E Lead-sheathed Cables.*	G-E BX or Oval BX permitted for under-plaster extensions.
Concealed extensions.		G-E Rubber Insulated Conductors.	
Surface extensions.		G-E Rubber Insulated Conductors.	
2. Low Voltage Circuits			
Bells, thermostats, etc.	Raceway not required by code but recommended for protection and changes in circuits. G-E Rigid Conduit except where noted with G-E Fiberduct for underfloor raceways. G-E Flexible Conduit, Metallic Tubing and Oval Duct may be used as required. Separate these raceways from general light and power circuit raceways.	G-E Rubber Insulated Conductors.	Not required. Desirable for mechanical protection of important circuits when no raceway is used.
Public telephones.		Installed by Telephone Company.	Not required.
Private telephones.		G-E Telephone Wires.	Not required.
Protection, signaling and line voltage control devices.	G-E Rigid Conduit as above. G-E Armored Cable as alternate.	G-E Rubber Insulated Cables in conduit.	G-E BX Cables without conduit. G-E BraidX Cables without conduit.
Radio wiring, shielded circuits.	G-E Rigid Conduit as above with G-E BX Cable as alternate.	G-E Rubber Insulated Wires.	G-E BX Cables or Lead-sheathed Wires or Cable with sheath grounded.
Radio wiring, non-shielded circuits.	Do not use metallic raceway	G-E BraidX Non-metallic Sheathed Conductors or Cables.	G-E BraidX Non-metallic Sheathed Conductors or Cables.
NON-FIREPROOF CONSTRUCTION			
1. General Light and Power Circuits			
Dry normal locations.	No raceway required by code for normal conditions. For highest grade installations, G-E Rigid Conduit (with G-E Flexible Conduit for special conditions) is recommended.	G-E Rubber Insulated Conductors.	G-E BX Cables. G-E BraidX Non-metallic Sheathed Cables and knob and tube work.
Damp normal locations.		G-E Lead-sheathed Cables.	G-E BXL Cables.
High temperature locations.		G-E Deltabeston Wires or Cables.	G-E Deltabeston Cables.
*Hazardous locations.	(Rigid Conduit may be required.)*	G-E Lead-sheathed Cables.*	G-E BXL Cables.*
Concealed extensions.	G-E Electrical Metallic Tubing or Oval Duct as required. Alternate G-E BX and BXL Cables.	G-E Rubber Covered Wires or Cables, lead-sheathed where required, in conduit.	G-E Oval BX or BXL Cables.
Surface extensions.			G-E BX or BXL Cables.
2. Low Voltage Circuits			
Bells, thermostats, etc.	No raceway required by code for normal conditions. G-E Rigid Conduit (with G-E Flexible Conduit, Metallic Tubing and Oval Duct for special conditions) in highest grade installations.	G-E Rubber Insulated Wires or Cables	G-E BraidX Cables.
Public telephones.		Installed by Telephone Company.	Installed by Telephone Company.
Private telephones.		G-E Telephone Wires.	G-E Telephone Wires.
Protection, signaling and line voltage control devices.	G-E Rigid Conduit recommended as above, with G-E BX Cable as alternate; in either case for protection against tampering or other hazards.	G-E Rubber Insulated Wires or Cables in conduit.	G-E BraidX Cables without conduit. G-E BX Cable without conduit.
Radio wiring, shielded circuits.	G-E Rigid Conduit as above with G-E BX Cable as alternate.	G-E Rubber Insulated Conductors in conduit.	G-E BX or Lead-sheathed Wires or Cables with sheath grounded.
Radio wiring, non-shielded circuits.	No metallic conduit or sheathing permissible.	G-E Rubber Insulated Conductors.	G-E BraidX Non-metallic Sheathed Conductors or Cables.
*Consult requirements of National Electrical Code and local code for proper wiring for the particular hazardous condition at hand.			



## 8 BRANCH DISTRIBUTION UNIT

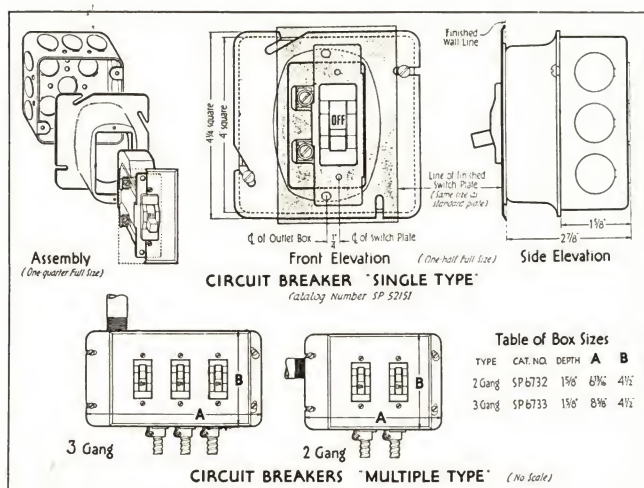


Materials available for branch distribution control include the following:

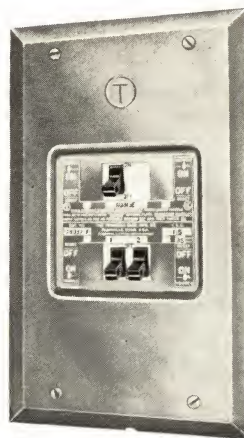
### G-E Branch-circuit Circuit Breakers—

These small circuit breakers serve both as a means of overload protection for the branch sub-circuits and as master control switches governing groups of lighting or convenience outlets—occasionally both.

Circuit breakers of 15-, 20-, 25-, 30- and 35-ampere capacity, single-pole 125-volt, a-c and d-c, are made for flush mounting in standard outlet boxes with raised covers. Their appearance and general dimensions are shown in the accompanying illustration and diagrams. Bodies and operating tumbler are of brown Textolite. The tumbler takes three positions: *Down* to break the circuit manually; *center*, indicating that the circuit has been broken automatically by an overload or short circuit; *up*, to close the circuit (normal position in operation). When an overload occurs, service may be restored by throwing tumbler down to the "off" position, then fully up to the "on" position. If the overload condition remains, the circuit breaker will function even if the tumbler is held, and when the handle is released it will take the center position.



**Trumbull Multi-breakers**—See Section No. 6. All types of Trumbull Multi-breakers for homes and small buildings are described here.



Trumbull Multi-breaker, flush type, also available for surface mounting.



Trumbull Residence Panelboard—Enclosed Branch-circuit cutouts, flush type; available also for surface mounting.

**Trumbull Residence Panelboards**—Single Fusing—(2-12 circuits incl.)—3- or 2-wire Mains—2-wire Branches. These panelboards are designed for use with residence lighting systems to be located in a place more convenient for renewing fuses than on cellar meter board.

An abundance of 1/2-inch knockouts, located in ends, sides and back, and 1/2-inch to 1 1/4-inch knockouts (depending upon the number of circuits), in ends and sides for either flexible or rigid conduit, assure convenience in wiring.

Protective Shield safeguards the user from accidental contact with current-carrying parts while renewing fuses.

Circuit Index Card provided on door of each panel except the two-circuit. Removable front on flush-type panels overlaps the box on all sides. Box is galvanized steel. Each complete device is packed in an individual carton properly labeled. Panel is easily removed as a unit for pulling wires. Porcelain bases are used throughout.

## Specifications: Branch Distribution Unit 8

The branch loadcenters should be located as near centrally to the load on each floor as is possible. Circuit breakers Cat. No. GB115, GB120, GB125, GB130, GB135 with G-E square boxes with raised covers, Cat. No. SP52151 for single unit, Cat. No. SP6732 for pairs of circuit breakers, Cat. No. SP6733 for 3 and Cat. SP6734 for four units; or circuit breaker enclosures may be used—Cat. No. GB71F for single units and Cat. No. GB72F for pairs. Trumbull Multi-breaker loadcenters of proper capacity and Trumbull Residence panel boards can also be used. If circuit breakers are used in the branch unit, Circuit breakers should also be used in the Main Distribution Unit.

## 9 FINAL CIRCUIT CONDUCTORS

See Section No. 7, Sub-feeder Conductors. The wires and cables shown for sub-feeder use may be used in smaller sizes for Final Circuit Conductors.



## Specifications:

### Final Circuit Conductors

9

Final-circuit conductors to lighting and convenient outlets: It is recommended that the number of outlets to be served by each circuit be divided evenly and placed on 2, 3 or 4 sub-circuits, instead of being connected on one long run of conductor. These sub-circuits taken together will form a final branch circuit.

## 10 BOXES AND FITTINGS

**Outlet and Switch Boxes**—General Electric offers a complete line of high-grade outlet and utility boxes for every type of installation. These boxes are available with a wide assortment of covers.



3 1/2-in. Octagonal Outlet Box SP24151



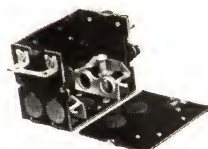
4-in. Square Outlet Box SP52151S



4-in. Round Outlet Box SP26625F



4-in. Long Utility Box SP5800



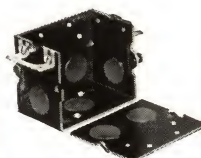
Switch Box for BX Cable SP6972



Switch Box for BraidX SP6974



Switch Box for BX old work SP7072

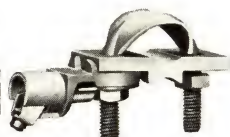


Switch Box for Rigid Conduit SP6971

**Fittings**—Each type of raceway requires special fittings for installation. Therefore, General Electric supplies all necessary fittings and accessories for commercial, industrial and residential wiring. Below is shown a representative group.



1/2-in. Locknut SPI41



Grounding Device SP825



Entrance Cap SPI525



1/2-in. Bushing SPI22



BX Squeeze Connector SP6125



BraidX Connector SP7101



"Tite-Bite" Connector SP5300



1/2-in. Strap SPI276



E.M.T. Coupling SP2550



E.M.T. Connector SP4550



Entrance Cable Connection SPI402C



Entrance Cable Connector SP3206B

## Specifications: Junction Boxes

10

Pull Boxes and Junction Boxes: G-E Stamped Steel Boxes with solid covers, such as Cat. No. SP52151.

Floor boxes in wood joist floors: G-E Utility Outlets, Cat. No. SP8000.

Outlet boxes for wall or ceiling fixtures: G-E Octagonal or Square Boxes of suitable size such as Cat. No. SP54151 or Cat. No. SP52151, mounted on suitable hangers, if in stud construction, such as Cat. No. SP6602; except where construction conditions require shallow boxes such as Cat. No. SP56121.

Switch Boxes: G-E Sectional Switch Boxes, such as Cat. No. SP6972.

## 11 OUTLETS

This classification to save space includes lampholders, convenience outlets and switches.

### G-E Lampholders

G-E Lampholders are available with porcelain, brass or Textolite shells, rated at 250 or 660 watts, 250 volts. Brass lampholders are made in two basic types—fluted-catch and threaded-catch. Textolite sockets have all moving parts sealed for complete protection. There are no linings to char. These sockets have a fine appearance of molded brown Textolite, with a highly lustrous finish. They are not only appropriate for use in rough surroundings but may also be used to advantage wherever the brown Textolite color is acceptable. Textolite sockets have the caps and bodies fastened together by a threaded ring. G-E Lampholders are available with four types of operating mechanisms: Keyless, key, pull, push.



GE2708—Pull-type—Insulated chain, Textolite Body, Threaded Catch-ring



GE1210—Key-type—Snap-catch, Porcelain Body



GE770—Medium Base, Keyless Brass Body, Fluted Catch

## Specifications:

### Outlets 11 — Lampholders

In all locations: Not subject to handling or strains: Textolite Lampholders except where brass shells are designated and these should be Brass Shell Fluted-catch Lampholders. Subject to frequent handling or strain: Textolite Lampholders except where brass shells are designated and these should be Brass Shell Threaded-catch Lampholders. Subject to dampness; G-E Textolite Lampholders.



## G-E Convenience Outlets

G-E Convenience Outlets are made of Textolite with smooth faces so designed that the prongs of a plug slip easily into the proper slots.

### SELECTION TABLE

Purpose and Condition	Type and Description	Typical Catalog No.
<b>GENERAL UTILITY WALL OUTLETS</b>		
Where only one appliance will be served—refrigerator, ventilating fan, etc.	Single outlet—side-wired. Single outlet—top-wired.	GE2740 GE2533
Where more than one appliance may be served—lamps, vacuum cleaners, radios, etc.	Twin outlet—side wired. (Also available in ivory.) Twin outlet—top wired.	GE2679 GE2534
Where switch control of one circuit is desired, leaving the other uninterrupted for electric clocks, etc.	Twin outlet—4 binding screws—separate feeds—separate ground.	GE2902
Where various appliances will be served, for some of which polarity may be required or desired, others having conventional 2-pronged caps.	Double-duty twin outlets for conventional 2-pronged cap or 3-pronged polarity cap: (a) With terminal screw for ground wire. (b) Without terminal screw.	GE2988 GE2989
For heavy-duty service on radiant heaters, light power equipment, etc.	Heavy-duty polarity outlets, with 2 or 3-pronged polarity cap: (a) With 2-pole cap (GE1370). (b) With 3-pole cap (GE2758).	GE1367 GE2762
Floor outlets.	Single recessed outlet furnished complete with floor plate and 2 flush plugs (non-watertight).	GV2E1
Wall-hung electric clocks	Single recessed outlet. Furnished complete with special hook for clock.	GE2942
Wall-hung electric fans.	Single outlet, furnished complete.	GE3035
Outdoor outlets for open porches, floodlights Christmas decorations, etc. Used on walls only.	Single outlet. Furnished complete with rubber seal gasket and cadmium plated flush plate and cap. (Weatherproof cap for appliance cord, GE2960.)	GE2959
Radio outlets.	Power outlet and polarity radio outlet. With or without flush plate and special radio polarity cap. For doublet antenna, use GE3053.	GE2997
<b>OUTLET AND SWITCH COMBINATIONS</b>		
Switch and outlet in same device.	Single outlet and double pole switch.	GE2736
Switch, outlet and pilot light to indicate when circuit is in use, in one device.	Single outlet, single pole switch and pilot light; (Pilot light alone for use with any outlet or switch GE2822—receptacle only).	GX3A5
Outlet and pilot light in one device.	Single outlet and 1 pilot light.	GX3A3
Pilot light and switch in one device. To indicate when remote outlet is in use.	Twin outlet and 1 pilot light.	GX3A4 GE2734



Twin Convenience Outlet—Top-wired, GE2534



Twin Convenience Outlet—Side-wired, GE2679. This same outlet—top-wired, GE2534.



Twin Outlet with one outlet controlled by a Switch, the other outlet uninterrupted—four binding screws, separate feeds, separate ground—GE2902



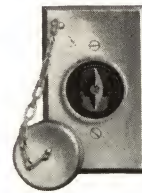
Single Outlet—Side-Wired, GE2740. This same Outlet top-Wired, GE2533



Double-duty Twin Convenience Outlet, GE2988



Fan Hanger Outlet, GE3035



Outdoor Weatherproof Outlet, GE2959. Protecting Cap, GE2960



Electric Wall Clock Hanger Outlet (complete), GE2942



Radio Outlet, GE3052

### Specifications:

#### Outlets 11 — Convenience Outlets

Top-wired Twin Convenience Outlets such as GE2534, except where circuit is designed to serve but one appliance, when an equivalent single outlet should be installed.

Outdoor Outlets: GE2959.

Portable Fixture Outlets: For fans, etc., G-E Hanger Outlet GE3035.

Electric Clock Outlet: G-E Electric Wall Clock Hanger Outlet, Cat. No. GE2942.

Radio Outlet: G-E Electric Radio Outlets, Cat. No. GE3052.

Switch and Convenience Outlet Plates: Unless brass plates are designated, all switch and outlet plates should be Textolite. Where brass plates are designated they should be .060" thick ("struck-up") in service and secondary living or public areas, and solid plates, .100" thick, in main living and public areas, finished as elsewhere specified.

## G-E Flush Plates for Convenience Outlets and Switches

### MATERIALS

Standard flush plates are made of brass, Textolite (black or brown) and ivory compound—in a variety of forms and combinations to meet all possible requirements.

**Brass Outlet Plates** are made in three grades, all normally furnished in standard brush brass finish. They may be obtained in a variety of finishes including colors. These include polished brass, embossed or stamped designs, colored lacquered finishes in single tones or in mottled and variegated color effects, and plated or oxidized finishes. Consult the General Merchandising Catalogue for special finishes carried in stock; others are obtainable on special order.

**Solid Brass Plates**, .100" thick, are the highest standard grade, and are for use where brass plates are demanded in highest grade installations.











**Heavy Stamped Plates** are .060" thick, ("struck-up") and are suitable for general and high grade installations.

**Stamped Brass Plates**, .040" thick ("struck-up"), are the lightest made, and are for use only where economy is the primary consideration.



## PLATE SELECTION CHART

**NOTE:** Plates shown are typical single gang plates (excepting GE2814 and Circuit-Breaker Plates) and may be combined in multiple gang plates in any desired combination. Catalogue numbers are for brown Textolite and brush brass .060 in. except GE2256 which is made .100 in. thickness only.

PLATE	DESCRIPTION	TEXTOLITE	BRASS
	Single Switch Plate	GE2316	GE1741
	Single Outlet Plate	GE2314*	GE1787
	Twin Convenience Outlet Plate	GE2315*	GE1788
	Telephone Outlet Single Plate with compound bushing	GE2349	GE2140
	Double	GE2542	GE2098
	Triple Switch Plate	GE2693	GE2727
	Double Switch Plate	GE2691	GE2726
	Single Switch Plate	GE2893	GE2957
	Pilot Light Plate. Used with GE2822 receptacle. (Available also with various colored round and rectangular bulls-eyes for receptacle GE853)	GE2823	GE1787
	Combination Switch and Convenience Outlet Plate. (Available also for heavy duty device and for horizontal or vertical two-gang assemblies)	GE2737	GE2738
	Combination Pilot Light, Switch and Convenience Outlet Plate, two-gang	GE2814	
	Combination Switch and Pilot Light Plate	GE2735	GE2738
	Circuit Breaker Plate		
	Single	GB51	GB61
	Double	GB52	GB62
	Triple	GB53	GB63
	Quadruple		GB64

\* Special gang plates available in brass only

**Textolite Outlet Plates.** These have become the accepted standard because of durability, fine appearance and freedom from tarnish and discoloration. Brown is the standard color. They are also available in black. Ivory Compound plates are available for standard flush switches up to and including 3-gangs. They are also supplied for convenience outlets, single gang; and for combination outlet and switch, double gang.

**Special Plates.** Special brass plates 0.100" thick can be obtained with round corners and round edges, with round corners and bevelled edges, with square edges, and with raised edges. On special order, flush plates may be obtained made from other metals such as bronze and aluminum. Identifying words or numbers will be engraved on metal plates when so ordered.

### SIZES

All standard flush plates for single gang switches or outlets are  $2\frac{3}{4}$ " by  $4\frac{1}{2}$ ". Dimensions of multiple gang plates may be had on request.

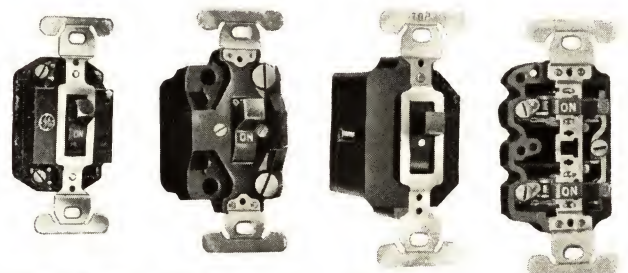
**Horizontal Multiple Gang Plates.** A single plate covering a single switch or outlet unit measures  $2\frac{3}{4}$ " by  $4\frac{1}{2}$ " and may be used either vertically or horizontally according to the position in which the outlet box is mounted. Horizontal plates for multiple gang switch or outlet units have the height constant, the width being increased  $1\frac{1}{8}$ " for each additional gang or unit.

**Vertical Multiple Gang Plates.** These plates have a constant width of  $2\frac{3}{4}$ ", the length being increased  $3\frac{5}{8}$ " for each additional unit.

**Combination Gang Plates.** Multiple gang plates may be obtained to fit any combination of switch, convenience outlet and pilot light units, the only limitations being the number of switches or outlets obtainable in a single gang unit. The maximum number of switches in a single gang or unit is three. Convenience outlets are provided in single or double capacity.

**Circuit-Breaker Plates.** These plates are available in both single type and multiple gangs.

### G-E Switches

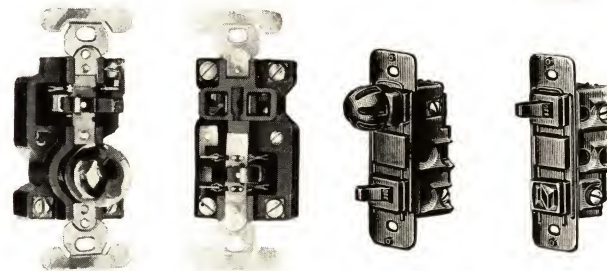


Single-pole Switch, Composition Body, GE2842.

Single-pole Switch, Heavy-duty type, GE2923.

Mercury Switch, Composition Body, GE2756.

Combination Switch Device, Two Single-pole Units, GE2907.



Combination Switch and Pilot Light, GE2734.

Combination Switch and Convenience Outlet, GE2736.

Combination Switch and Pilot Light, GX3A1.

Time-Saver Combination Switch and Convenience Outlet, GX2A1.

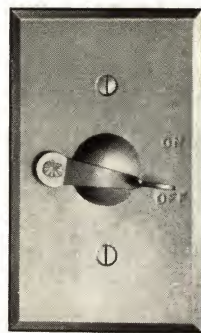




G-E Sphinx Mercury  
Switch,  
GE3008.



Automatic Door  
Switch,  
GE273.



Outdoor Flush  
Switch,  
GE3024.

## TYPES

This material is arranged to facilitate choice of G-E Switches available for the control of electric light and power circuits.

Switches used in normal lighting and power circuits are of three types:

**Tumbler Switches.** These have largely superseded other types because of simpler construction, ease of operation, and pleasing appearance.

**Rotary Snap Switches.** These are seldom used on lighting circuits except with exposed wiring or surface raceways. More generally used to control small motors and circuits in electric ranges.

**Push-button Switches.** Though still made, this type is practically obsolete.

## TUMBLER SWITCHES

G-E Tumbler Switches are made in both surface and flush-mounting styles, the former being used only with surface wiring where appearance is not a factor. Flush-mounting styles are available in the following grades:

**Porcelain Body.** A general purpose switch having the switch mechanism mounted in a porcelain box with a snap fiber cover. Also available with ivory handle.

**Composition Body.** The mechanism is completely enclosed in a moulded composition box—fully protected from tampering and mechanical damages. Also available with ivory handle.

**G-E Sphinx Mercury Switches.** Silent. Durable. Single-pole, double-pole, 3- and 4-way switches available. Textolite casings. Are enclosed in glass-sealed metal button. Textolite handles in brown or ivory.

**Heavy-duty Switches.** The mechanism is totally enclosed in a Textolite box. Their size requires the use of deep outlet boxes. Used on circuits up to 30 amp. capacity for heavy-duty service.

**Tumbler Switches.** Made in several styles to meet the various requirements of standard wiring systems. The use of single and double-pole switches, and of the three-way and four-way switches is fully covered in the Switch Selection Table (see page 15) with diagrammatic hook-ups. Other styles for specific service conditions are the following:

**Outdoor Switches.** For open porches, floodlights, Christmas decorations, etc. Single pole G-E 3024; 3-way G-E 3039. Complete with rubber seal gasket and cadmium flush plate.

**G-E Electroliner Switches.** These permit the control of two or three circuits, in sequence or combination, with one switch.

**G-E Lock Switches** are operated by a key, and may be locked "on" or "off," thus limiting the control to authorized persons.

**G-E Mercury-break Switches.** In these noiseless switches a mercury element takes the place of a snap mechanism.

**G-E Combination Switch Assemblies** consist of from one to three switches mounted in the same moulded composition body, fitting standard switch boxes. Possible arrangements in these assemblies are shown in the table on page 15. (See "Combination Switch Assemblies" in "Switch Selection Table.") These assemblies save space, reduce the number of outlet boxes required, and may be used to increase the extent of switch control in existing systems.

**G-E Switch and Outlet Combinations** in one device are designed for convenience and space saving and to increase the effectiveness of circuit control. They are available in the following units:

Switch and Convenience Outlet.

Switch and Pilot Light.

Switch, Pilot Light and Convenience Outlet.

**Special Switches** are made in a variety of forms. These include automatic door switches, miniature tumbler switches, "pony" back-connected surface tumbler switches, and canopy switches for lighting fixtures of rotary, snap and pull types in all required forms. Also a complete line of heavy-duty tumbler switches for panel or box cover mountings.

**G-E Step-saver Switches.** In all rooms having more than one door, 3- or 4-way switches (as required) should be located at each door to control one major source of light in each room. They should also be used to control lights in halls and passages, on different floors of a residence, between detached buildings and wherever it is desirable to control light from separate entrances and exits.

## Specifications:

### Outlets 11 — Switches

In all locations except as noted below: G-E Single-pole Compound Box Flush Tumbler Switches, such as GE2842. If porcelain base switches are desired and are so designated on drawings or elsewhere, they should be such as Cat. No. GE2841.

**Step-saver Switches:** Should be used to control at least one light in every space served by two doors more than ten feet apart in all stair halls, between main buildings and garage or out-buildings, and should be G-E Three-way Flush Tumbler Switches, such as GE2593 with equivalent Four-way Switches as required.

**Silent Switches:** To be used where designated on drawings (in living rooms or bedrooms, hospital rooms, etc., where silent operation is desired) and should be G-E Sphinx Mercury Flush-Tumbler Switches Cat. No. GE3008.

**Double-pole Switches:** Should be used on circuits controlling appliances drawing more than 1500 watts, and on circuits serving convenience outlets designed for ungrounded appliances drawing over 1500 watts and should be equivalent to Cat. No. GE2846.

**Heavy-duty Switches:** Where indicated on drawings should be G-E Heavy-duty Tumbler Switches, Cat. No. GE2923 type as required.

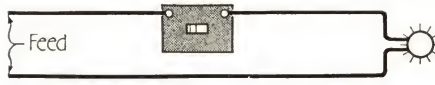
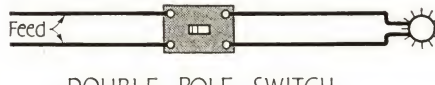
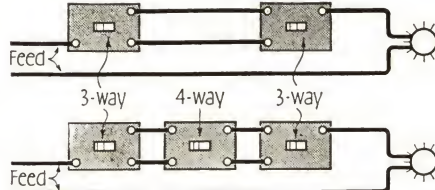
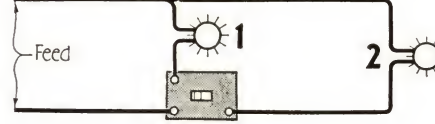
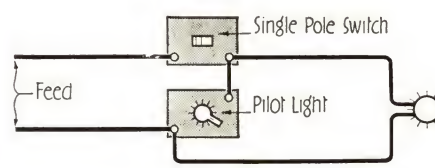
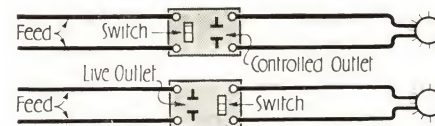
**Special Switches: Combination Switches:** Should be Cat. No. GE2903 or any combination in this series as required: Switch and Pilot Light Combination Cat. No. GE2734, or Switch and Outlet Combination Cat. No. GE2736 or their equivalent, where indicated on drawings.

**Door Switches:** G-E Door Switches; either Cat. No. GE273 where light is on when door opens, or Cat. No. GE274 where light is on when door is closed; mounted in G-E Door Switch Boxes, Cat. No. SP6597.

**Weatherproof Switches:** Should be GE3024 when exposed to outdoor weather conditions.



## G-E SWITCH SELECTION TABLE

Wiring Diagrams	Purpose	Type and Description of Switch	Typical Catalog Nos.	
			Porcelain Base	Composition Base and Heavy Duty*
GENERAL PURPOSE SWITCHES: SINGLE UNITS; ONE TO EACH SWITCH BOX				
 <p>SINGLE POLE SWITCH</p>	To control: One circuit from one point.	Single Pole — controls one wire (live side) only of a single circuit.	GE2841	GE2842 GE2923*
 <p>DOUBLE POLE SWITCH</p>		Double Pole—controls both sides of a single circuit. Required for 3-wire circuits. Recommended where appliances of over 1000 watts will be used.	GE2845	GE2846 GE2924*
 <p>3 AND 4-WAY SWITCHES</p>		Silent switch—for hospitals, nurseries, bedrooms, etc., where noise must be eliminated. Single Pole only.	GE1755	GE2756
		Lock-Switch, key operated—for limited control in public rooms, etc. Single Pole listed. Also made in double pole, 3-way and 4-way types.	GE1755	GE2670
	One circuit from two points.	Automatic door switch—for closets, telephone booths, etc. Installed in door jamb. Bumper plate included. To turn light on when door opens. To turn light on when door closes.		GE273 GE274
	One circuit from three or more points.	Three-way switch—controls single circuit from 2 remote points. Two switches required.	GE2514	GE2593 GE2925*
	Two circuits with one switch.	Four-way switch—controls single circuit from 3 remote points. Used with 2 three-way switches. Each additional control point requires an additional four-way switch.	GE2515	GE2596
	Three circuits with one switch.	Electroliner switch—controls two circuits in sequence by repeated throws of a single tumbler. Requires deep outlet box.	GE2518	
		Electroliner switch—controls three circuits in sequence or combination.	GE2519	
COMBINATION SWITCH ASSEMBLIES TO CONTROL ONE, TWO OR THREE CIRCUITS FROM ONE SWITCH BOX**				
 <p>2-CIRCUIT ELECTROLIER</p>	To control: Two circuits with common feed.	2 single pole units. 1 single pole unit—1 three-way unit.		GE2907 GE2907
	Two circuits with separate feed.	2 single pole units. 1 single pole unit—1 three-way unit. 2 three-way units. 1 single pole unit—1 four-way unit. 1 three-way unit—1 four-way unit.		GE2908 GE2910 GE2911 GE2912 GE2913
	Three circuits with common feed.	3 single pole units. 2 single pole units—1 three-way unit.		GE2914 GE2916
	Three circuits with separate feed.	3 single pole units. 2 single pole units—1 three-way unit. 1 single pole unit—1 three-way unit—1 four-way unit. 1 single pole unit—2 three-way units.		GE2915 GE2917 GE2918 GE2938
	One circuit. Matching two- and three-tumbler units in appearance.	1 single pole unit. 1 three-way unit. 1 double pole unit. 1 four-way unit.		GE2903 GE2904 GE2905 GE2906
SWITCH, CONVENIENCE OUTLET AND PILOT LIGHT COMBINATIONS				
 <p>SWITCH AND PILOT</p>	To control: One circuit with pilot light indicator.	Single pole switch and pilot light. (Pilot light alone for use with any switch—GE2822—receptacle only.)		GE2734
	One circuit with outlet in same device.	Double pole switch and outlet. May be installed with outlet live or under switch control.		GE2736
	One circuit, with outlet and pilot light.	Single pole switch, outlet and pilot light. Each unit independent. Numerous combinations possible.		GX3A5
		Switch independent. Pilot light controlled by outlet.		GX3A6
 <p>SWITCH, CONVENIENCE &amp; PILOT</p>				

\*Heavy-duty switches. Capacity up to 30 amperes.

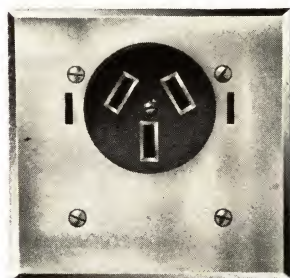
\*\*Any G-E Combination switch in one, two or three unit assemblies can be used to replace any standard flush switch in a single switch box. This permits ready increase of switch control in existing systems and the grouping of switch units with a minimum of cover plate area.

\*Heavy-duty switches. Capacity up to 30 amperes.

\*\*Any G-E Combination switch in one, two or three unit assemblies can be used to replace any standard flush switch in a single switch box. This permits ready increase of switch control in existing systems and the grouping of switch units with a minimum of cover plate area.



## 12 RANGE WIRING



Flush Range Receptacle GE3036  
with Plate GE3037



Range Outlet—GE3000  
Cover Receptacle  
Ground Clip 39x328

Rapid advances in the use of electricity for cooking, make it advisable to consider the installation of a special range circuit during construction or major alterations to avoid later inconvenience and expense, even though immediate use of an electric range may not be contemplated. An installation consists of the following:

**Special Power Circuit.** This is of 5 to 10 kw. capacity, run directly from the Main Distribution Control Unit. This circuit may be installed to serve both range and hot water heater by use of a load limiting device to cut off the heater when range is in use.

**Range Devices.** G-E Range devices consist of a special triple-pole, 50-amp., 250-volt outlet or receptacle and a flexible cord set of approved design. Range outlets should be located so as to be accessible when the range is in place and allow the range to be placed close to the wall.

**Flush Receptacle.** GE3036 is recommended for new work or high grade old work where appearance is an important factor. Equipped with grounding clips and slots for use where 4-wire connection set is required.

**Surface Receptacle.** GE3000 is for surface mounting only and is recommended for old or new work where low cost is of paramount importance. Black Textolite cover fits snugly on to one-piece Textolite base. Designed so that service cables to outlet can be brought through floor or the baseboard. If fourth wire ground is required use grounding clamp.

**Three Wire Unicords.** (Cat. No. GE3003) are recommended for use where no fourth wire grounding of the range frame is required. See local authorities for grounding rules. G-E Unicords consist of an all-rubber plug moulded to 38-inch length of flexible rubber 3-conductor cable. Four-wire Cord Sets are also available (Cat. No. GE3050).



Range Outlet with  
"Unicord" Set  
GE3001

## Specifications: Range Wiring 12

Range Circuit: G-E Range Receptacle, and G-E Unicord, or a G-E Range Connection Cable, depending on grounding requirements. Non-shielded circuits. BraidX single conductors or cables.

## Check List for G-E Home Wiring

This list is a reminder of all the items that may be needed in the design of residential wiring. It may be used partly or totally. It is designed particularly for use in laying out G-E Home Wiring.

To avoid repetition in several parts of this check list, reference is made to the following rules:

**RULE 1.** Twin convenience outlets, in rooms where arrangement of furniture, etc., may vary, should be placed so that no point along the floor line, in any unbroken wall space, is more than six feet from an outlet in that space. However, no outlet is required in any space, the major portion of which is covered by a door when opened. In halls, passages, etc., one twin convenience outlet should be provided for each 12 feet of length or major fraction thereof, with at least one outlet in each hall or passage.

**RULE 2.** "Step-Saver" switches (3-way and 4-way as required) should be provided in halls, stairways, or rooms

having two or more doors, and on lighting circuits extending between buildings, to control at least one light source from each entrance-exit point. Function of rooms, etc., and traffic through them rather than the distance between doorways should determine the need for these switches. Their purpose is to permit continuous passage in either direction, turning lights on and off, without retracing steps.

**RULE 3.** Lighting outlets for installed fixtures should be provided in all rooms, whether or not portable lamps are chiefly used. Those not initially used may be covered with a blank flush cover. Good lighting practice demands general lighting in addition to local lighting. One ceiling outlet is adequate for most rooms. Two outlets are required if the room area is more than 300 square feet, or if the length is more than one and a half times the width. Wall, bookcase, mirror or additional ceiling outlets should be provided where local or decorative lighting may be needed.

## PROTECTIVE SYSTEMS

One fixed light in each room and exterior floodlights controlled by master switch in bedroom.

Burglar and fire alarm circuits should employ G-E Rigid Conduit for mechanical protection and to prevent tampering and deliberate damage. Thermostat, humidistat,

water level indicator and such circuits do not require protection.

It is advisable to serve protective alarm systems from separate transformers to avoid overloading and voltage losses.



LOCATION	CONVENIENCE OUTLETS	LIGHTING OUTLETS	SWITCHES AND CIRCUIT BREAKERS	SPECIAL OUTLETS
Main and side entrances	Outdoor outlets for decorative lighting. See "Terraces"	Overhead or side	Locking switch for outside and vestibule lights - 3 or 4-way	Push button for door bell Illuminated house number
Service entrances		Overhead or side		Push button for door bell
Open porches	Outdoor outlets - See Rule 2	Overhead or side wall	Switch inside of door leading to porch	Push button for annunciator Telephone outlet plug
Main Entrance Hall, including Vestibule and Stair Hall For coat closet see "Closets" For powder-room or lavatory, see "Bathrooms"	See Rule 2 Clock hanger outlet Fan hanger outlet	See Rule 3	Single-pole, 3 or 4-way switches (see Rule 3) controlling lights in: Main Entrance (exterior) and Vestibule; Main, Upper and Stair Halls; Cellar Stairway (with pilot); Gardens, Driveway, Gates, etc. Flush Circuit breakers protecting subcircuits in main living areas and all outside lighting circuits	Telephone outlet Organ or radio reproducer outlets
Main Living Rooms Library or Study Music Room Reception Room	Follow Rule 1 throughout Clock hanger outlet Fan hanger outlet Floor outlets for free standing tables, pianos, etc. Flush outlets in mantles, etc., for luminous ornaments	See Rule 3 Consider outlets for cove lighting; panel, beam, cornice and soffit lighting; "spot" or local lights for dominant features, paintings, etc.	Local control of fixed lighting outlets. See also Rule 3 Consider switch control of one side of twin convenience outlets serving portable lights	Telephone connection Radio outlets Push button or pull cord for servants' annunciator Thermostat, humidistat or air-conditioning control
Dining Rooms and Breakfast Rooms	Follow Rule 1 Floor outlet under table Clock hanger outlet Fan hanger outlet	See Rule 3 Ceiling outlet over table essential	Control of fixed lighting outlets by 3 or 4-way switches at living and service entrances	Table or floor button to kitchen annunciator Telephone outlet plug Radio outlets
Enclosed Porches, Conservatories, etc.	See Rule 1 Fan hanger	See Rule 3	Local control switch at entrance	Push button for servants' call Telephone outlet plug Radio outlets
Kitchens, Pantries and Service Areas	Single outlets at refrigerator, dishwasher, garbage destructor Twin outlets (double-duty type) over all work tops Fan outlet - flush or hanger type Clock hanger outlet	Ceiling outlet supplemented by soffit lights at sink and range Combination lamp and convenience outlets over each work top	Local switch control for each wall or soffit light Wall switch control of ceiling light (see Rule 2) Switch controlling kitchen ventilator fan Flush circuit breakers protecting all kitchen and service area sub-circuits	Special range outlet Special water heater outlet Annunciator box, bells and buzzers Telephone Radio outlet
Service Entrance Hall or Vestibule	See Rule 1	Ceiling outlet	Switch for vestibule light (see Rule 2) 3-way switches controlling service entrance lights and entrance lights at garage and adjacent outbuildings	
Halls, Stairs and Passageways	See Rule 1	See Rule 3	See Rule 2 Flush circuit breakers protecting branch sub-circuits serving adjacent areas	Telephone outlets Push buttons or pull cords to servants' annunciator
Master Bedrooms Dressing rooms Nurseries	Follow Rule 1 throughout Fan hanger outlet	See Rule 3 with special emphasis on side lights at mirrors, lights to illuminate wardrobes in dressing rooms and night light circuits	Consider silent (Mercury type) switches throughout, at least for night light circuits See also Rule 2 and "Protective Lighting" below	Heavy-duty outlet for radiant heater (fireplace or portable) Radio outlets Push button or pull cord to servants' annunciator Telephone outlets
Servants' Bedrooms	See Rule 1	See Rule 3	Wall switch for lights	Night call bell House telephone
Bathrooms, Lavatories	Twin outlets at lavatory for toilet appliances Heavy-duty outlets (polarized) for radiant heater, sun lamps, etc.; out of reach of bathtub	Ceiling outlet Side lights at mirror Waterproof shower light Night light	Single-pole switches for lights Double-pole switches for heavy duty circuits; out of reach of the bathtub	Push button to servants' annunciator Consider exhaust fan over shower or toilet compartment
Closets (all types)		Ceiling or side wall outlets	Automatic door switch or switch and pilot light on room side, or pull chain on light fixture	
Storerooms Attics Open Cellars	Twin outlets as required by size for vacuum cleaners, etc.	Ceiling or side wall as required for lighting all parts	Switches for all lights (with pilot if at door). See also Rule 2)	
Utility Room Furnace and Equipment space	One or more for trouble lights, vacuum cleaner, repair tools, etc. (Preferably double-duty type)	Ceiling or side wall as required	Totalizing Unit, preferably with circuit breakers Flush circuit breaker for local branch sub-circuits if required Single-pole switches controlling all lights. See also Rule 2	Low voltage transformer Power outlet for invalid elevator, trunk lifts, etc. Power outlets for air conditioning equipment, oil burners, pumps, blowers, etc.
Laundry	Double-duty or heavy-duty outlets for washer, ironer, flat irons, dryer, etc.	Ceiling or side outlet for (general illumination) Lights over all fixed equipment	Single-pole controlling lights Double-pole as required for heavy-duty circuits	Exhaust fan outlet Extension call bell
Recreation Rooms Game Rooms	See Rule 1 Fan hanger outlet Clock hanger outlet	Ceiling or side for general illumination Special lighting for billiards, ping pong, etc.	Single-pole for general illumination Separate switches for special lighting See also Rule 2	Heavy-duty outlet for radiant heater (fireplace or portable) Telephone outlet Radio outlet Push button for servants' call
Terraces and Gardens; Shelters, Garden Houses, Boat Houses, etc.	Outdoor outlets on walls, columns, etc., for portable garden lights, hedge clippers, etc.; and in shelters for appliances and portable lights.	Fixed garden lights Fountain and pool lights Fixed lights in shelters as required	3 or 4-way switches controlling lighting of adjacent areas and grounds with master control from main house	In shelters: Push button for main house annunciator Telephone outlets
Work Rooms and Hobby Shops	Double-duty or heavy-duty with local switch control for all power machines, motors, etc.	See Rule 3 Special lights according to nature of equipment	Wall switches for general lights Pull switches for local lights	Ventilating fan House telephone



# Telephone, Radio and Low Voltage Wiring

*This page contains data on special and miscellaneous wiring not a direct part of the general light and power requirements for the home or other building.*

## LOW-VOLTAGE WIRING MATERIALS

These include circuits for call bells, annunciators, alarm systems, thermostats, etc., as well as intercommunicating telephone systems and radio wiring, which should all be considered in any electrical layout. Except for smaller wire sizes, materials are similar to those used for general light and power circuits. Materials designed for these services are indicated below.

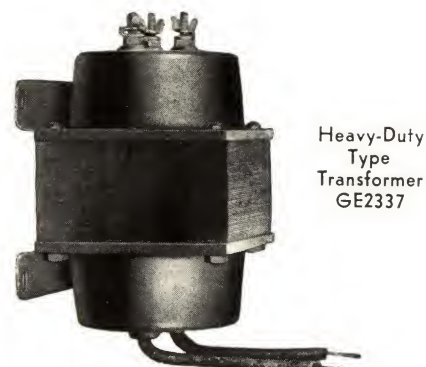
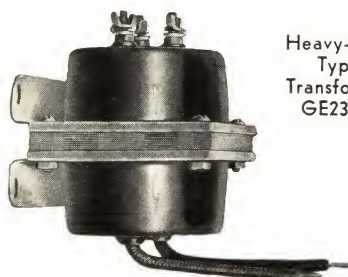
**Call Bell and Annunciator Wiring.** For voltages less than 32, G-E Code Grade Rubber Insulated Wire is used. Raceways of G-E Rigid Conduit or Metallic Tubing permit repairs or rewiring to be made readily.

**Transformers.** One or more should be installed near the distribution center. Selection of transformers is dependent on the following:

- the voltage and frequency of the primary current;
- the voltage required in the secondary current;
- the total wattage requirements of the low voltage systems so operated. This is generally advisable as a margin of safety, even though systems so served operate intermittently and independently.

TYPICAL TRANSFORMERS					
Primary Current		Secondary Current	Capacity Watts	Type	Catalog No.
Volts	Cycles	Volts			
110	50-140	8	10 to 5	Residence	GE2332
110	50-140	4/8/12/16 20/24	50	Heavy duty	GE2333
110	50-140	4/8/12/16 20/24	100	Heavy duty	GE2334
220	50-140	8/16/24	50	Heavy duty	GE2336
220	50-140	8/16/24	100	Heavy duty	GE2337

**Protective and Control Systems.** Burglar and fire alarm circuits should employ G-E Rigid Conduit for mechanical protection and to prevent tampering and deliberate damage. Thermostat, humidistat, water level indicator and such circuits do not require protection. It is advisable to serve protective alarm systems from separate transformers to avoid overloading and voltage losses.



## TELEPHONE WIRING

Branch telephones and intercommunicating systems need special consideration. While telephone companies install wiring materials (at the owner's expense) for all public and branch systems, raceways of G-E Rigid Conduit, or Fiberduct for underfloor extensions, should be provided (unless surface wiring is acceptable) to permit extending or altering the system. Telephone company engineers will assist in determining sizes and distribution of materials.

Private intercommunicating systems require G-E Telephone Wires, preferably in G-E Rigid Conduit.

## RADIO WIRING

In single or multiple residences and institutions, etc., provision should be made for radio wiring. G-E Rigid Conduit provides a raceway adapted to various systems, permitting rewiring to keep pace with developments in radio and television, and functioning as a shield or ground. The manufacturer of the system employed should be consulted on the layout.

**Multiple Antenna Systems** permit the use of a single antenna to serve a number of receiving sets, and require an antenna and a ground circuit to each receiver outlet. G-E Rigid Conduit permits flexibility in wiring and rewiring.

**Audio-frequency Distribution Systems** consist of independently tuned receiving sets which distribute audio-frequency impulses to reproducers in different locations, and require antenna and ground circuits to the central receiving sets only. From these sets Rigid Conduit raceways carry audio-frequency circuits to each speaker outlet, where switch and volume control permits selective reception through any of the central receivers. Dynamic or power speakers require a power outlet and switch. With such systems G-E Rigid Conduit acts also as a shield. BX Armored Cable, with the sheathing grounded, is suitable for single circuits, but does not readily permit rewiring.

**Remote Control Wiring for Radios** consists of multi-wired cables from a central receiver, each wire being connected to a position on individual control panels. Special outlet plates permit connection to the flexible cables leading to the portable control panel. The use of G-E Rigid Conduit provides flexibility in wiring and rewiring.

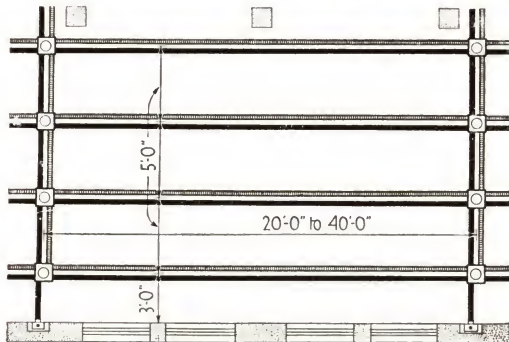
## PRIVATE LOW-VOLTAGE LIGHTING CIRCUITS

Private lighting plants operate at voltages of 50 and under. To prevent voltage losses, conductors, switches and sockets must be capable of carrying higher amperages than for 110-115 volt circuits. 600-watt sockets and receptacles, and heavy duty conductors and switches should be used.



# G-E Fiberduct Underfloor Raceway Systems

## CARRY LIGHT, POWER, SIGNAL AND TELEPHONE WIRES TO ANY PART OF FLOOR AREA



**Double Grid Layout.** Similar in floor area effectiveness to the Single Grid Layout but with ducts laid in pairs. Provides separate raceways for light and power wiring and for telephone and signal distribution.

Certain areas such as stenographic rooms, office service rooms with tabulating and bookkeeping equipment, etc., often require more electrical service than is permissible in a double grid layout. In such cases a triple grid layout may be used or any required number of ducts may be laid parallel under the area to be served.

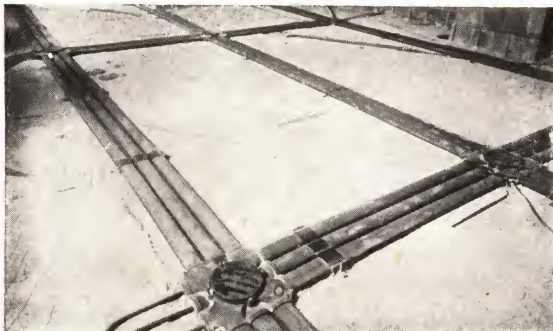
### FIBERDUCT IS FLAT, OVAL TUBING

G-E Fiberduct for underfloor wiring is a flat oval tubing of impregnated fiber that resists corrosive influences encountered in actual service. It forms a system of non-corrodible raceways in concrete floors and provides a practical means of bringing wires for light, power, telephone and signals to any part of the floor area. It permits new outlets to be safely and economically installed at any time and at any point along the duct system. Fiberduct is  $1\frac{1}{2}$ " by  $3\frac{3}{4}$ " O.D.

### INSTALLATION

In slab construction: Set junction boxes on the structural slab, bring the top of adjusting sleeve to the approximate grade of the finished cement floor by means of the leveling screws, and anchor them with a cement grout. Run Fiberduct sections from box to box, adjusting leveling screws to bring top of duct 1" below finished floor grade. ( $\frac{3}{4}$ " depth of concrete is minimum N.E. Code requirement.) Anchor all couplings in place with a cement grout. Then set adjusting sleeves in junction boxes precisely to finished floor grade before pouring fill.

In monolithic construction the installation is essentially the same. Soft iron tie wires are used in place of cement grout to

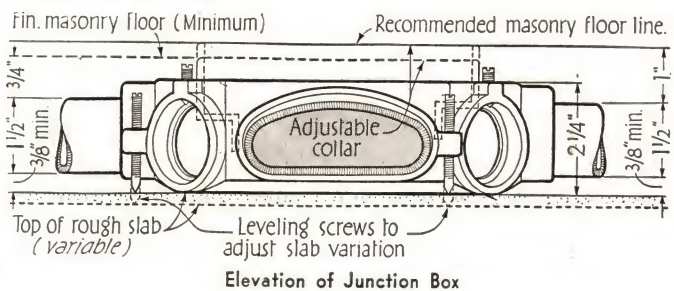


Multiple Duct Assembly

secure boxes and fitting to the steel or the form. When junction boxes are located over joists in pan construction, they are usually set on cross strip of bar iron laid from pan to pan.

### PRELOKAYLETS-SPECIALLY CONCEALED OUTLETS

Prelokaylets are special concealed outlets which can be attached to the Fiberduct at predetermined locations before the raceway is laid. They are adapted to use in stenographic and clerical rooms, office service areas and the like, where the approximate location of desks and equipment can be predetermined with reasonable accuracy.

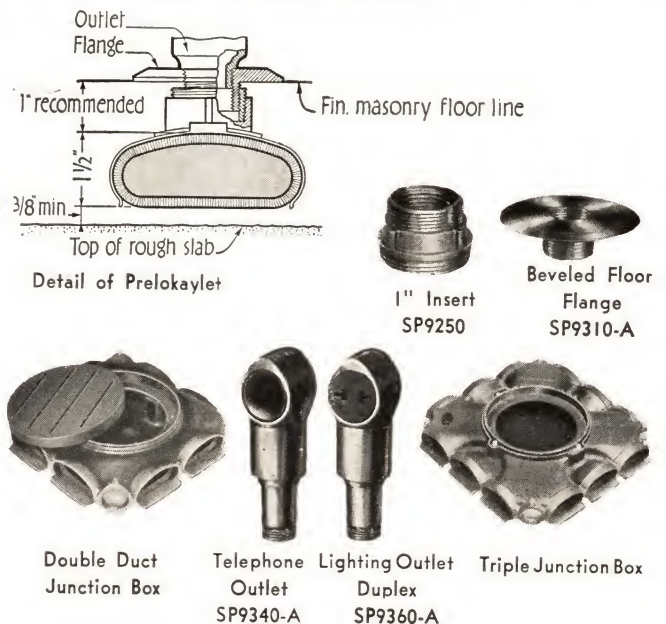


Prelokaylets do not penetrate the cement floor, and do not require flanges and floor plates until access to the circuits in the raceway is required at a Prelokaylet location; but they are readily accessible at any time with a minimum of inconvenience and expense. They are located through the finished floor by a magnetic or meter-type finder which "spots" the magnetized pin in the head of each Prelokaylet.

These outlets may be clamped to the Fiberduct sections on the job, or they can be set at the factory at specified spacings.

### JUNCTION BOXES

Subfloor fittings include Junction Boxes in single, double and triple types—also floor and wall elbows, cross under-fittings and other items required to complete installation.







## D I S T R I B U T O R S

Ala., Birmingham—Matthews Electric Supply Co.  
Ala., Montgomery—Matthews Electric Supply Co.  
Ariz., Phoenix—G-E Supply Corporation  
Ark., Little Rock—G-E Supply Corporation  
Cal., Fresno—G-E Supply Corporation  
Cal., Long Beach—G-E Supply Corporation  
Cal., Los Angeles—G-E Supply Corporation  
Cal., Oakland—G-E Supply Corporation  
Cal., Sacramento—G-E Supply Corporation  
Cal., San Diego—G-E Supply Corporation  
Cal., San Francisco—G-E Supply Corporation  
Colo., Denver—G-E Supply Corporation  
Colo., Denver—Hendrie & Bolthoff Mfg. & Sup. Co.  
Colo., Pueblo—Hendrie & Bolthoff Mfg. & Sup. Co.  
Conn., Bridgeport—G-E Supply Corporation  
Conn., Hartford—G-E Supply Corporation  
Conn., New Haven—G-E Supply Corporation  
Conn., Waterbury—G-E Supply Corporation  
D. C., Washington—G-E Supply Corporation  
Fla., Jacksonville—G-E Supply Corporation  
Fla., Miami—G-E Supply Corporation  
Fla., Tampa—G-E Supply Corporation  
Ga., Atlanta—G-E Supply Corporation  
Ga., Savannah—G-E Supply Corporation  
Idaho, Boise—G-E Supply Corporation  
Ill., Chicago—G-E Supply Corporation and branches  
Ill., Chicago—Hawkins Electric Co.  
Ill., Chicago—Metropolitan Electrical Supply Co.  
Ill., Decatur—Morehouse & Wells Co.  
Ill., Peoria—Universal Electric Co.  
Ill., Quincy—Crescent Electric Supply Co.  
Ill., Rockford—G-E Supply Corporation  
Ill., Springfield—G-E Supply Corporation  
Ind., Evansville—G-E Supply Corporation  
Ind., Fort Wayne—Protective Electric Supply Co.  
Ind., Indianapolis—G-E Supply Corporation  
Ind., Muncie—G-E Supply Corporation  
Ind., Richmond—Richmond Electric Co.  
Ind., South Bend—South Bend Electric Co.  
Ind., Terre Haute—Advance Electric Co.  
Ia., Burlington—Crescent Electric Supply Co.  
Ia., Davenport—Crescent Electric Supply Co.  
Ia., Des Moines—G-E Supply Corporation  
Ia., Dubuque—Crescent Electric Supply Co.  
Ia., Mason City—Crescent Electric Supply Co.  
Ia., Sioux City—G-E Supply Corporation  
Ia., Waterloo—Crescent Electric Supply Co.  
Kan., Wichita—G-E Supply Corporation  
Ky., Ashland—Ben Williamson & Co., Inc.  
Ky., Lexington—G-E Supply Corporation  
Ky., Louisville—G-E Supply Corporation  
La., New Orleans—G-E Supply Corporation  
La., Shreveport—G-E Supply Corporation  
Me., Bangor—G-E Supply Corporation  
Me., Portland—G-E Supply Corporation  
Md., Baltimore—G-E Supply Corporation

Mass., Boston—G-E Supply Corporation  
Mass., Boston—Milhender-Afes Elec'l Co.  
Mass., Lynn—Des Roberts Elec'l Sup. Co.  
Mass., New Bedford—Mendell Electric Supply Co., Inc.  
Mass., Springfield—G-E Supply Corporation  
Mass., Worcester—G-E Supply Corporation  
Mich., Battle Creek—Central Electric Supply Co.  
Mich., Detroit—G-E Supply Corporation  
Mich., Detroit—Frank C. Teal Company  
Mich., Grand Rapids—G-E Supply Corporation  
Mich., Kalamazoo—G-E Supply Corporation  
Mich., Lansing—G-E Supply Corporation  
Mich., Muskegon—Fitzpatrick Electric Supply Co.  
Mich., Saginaw—G-E Supply Corporation  
Minn., Duluth—G-E Supply Corporation  
Minn., Minneapolis—G-E Supply Corporation  
Minn., Minneapolis—Peerless Elec'l Co.  
Minn., St. Paul—G-E Supply Corporation  
Miss., Jackson—G-E Supply Corporation  
Mo., Joplin—G-E Supply Corporation  
Mo., Kansas City—G-E Supply Corporation  
Mo., St. Louis—G-E Supply Corporation and branches  
Mont., Billings—G-E Supply Corporation  
Mont., Butte—G-E Supply Corporation  
Neb., Omaha—G-E Supply Corporation  
N. H. Manchester—G-E Supply Corporation  
N. J., Atlantic City—Kay Electric Supply, Inc.  
N. J., Jersey City—G-E Supply Corporation  
N. J., Morristown—G-E Supply Corporation  
N. J., Newark—G-E Supply Corporation  
N. J., Newark—E. B. Latham Co.  
N. J., Paterson—G-E Supply Corporation  
N. J., Trenton—Tab Electric Supply Co., Inc.  
N. M., Albuquerque—Hendrie & Bolthoff Mfg. & Sup. Co.  
N. Y., Albany—Havens Electric Company  
N. Y., Binghamton—Southern Tier Elec. Supply Co.  
N. Y., Buffalo—G-E Supply Corporation  
N. Y., Elmira—Southern Tier Electric Supply Co.  
N. Y., Glens Falls—Glens Falls Electric Supply Co.  
N. Y., Jamaica—Central Queens Elec. & Lighting Fixture Corp.  
N. Y., New Rochelle—Royal Eastern Elec. Supply Co.  
N. Y., New York—G-E Supply Corp. and branches  
N. Y., New York—E. B. Latham Co.  
N. Y., New York—Royal Eastern Elec. Supply Co.  
(also Borough of Brooklyn and Long Island City)  
N. Y., Niagara Falls—G-E Supply Corporation  
N. Y., Poughkeepsie—Electra Supply Co., Inc.  
N. Y., Riverhead, L. I.—Central Queens Elec. & Lighting Fixture Corp.  
N. Y., Rochester—G-E Supply Corporation  
N. Y., Syracuse—Gould-Farmer Co.  
N. Y., Utica—Langdon & Hughes Electric Co.  
N. Y., White Plains—G-E Supply Corporation  
N. C., Charlotte—G-E Supply Corporation

N. C., Raleigh—G-E Supply Corporation  
N. Dak., Fargo—Dakota Electric Supply Co.  
O., Akron—G-E Supply Corporation  
O., Canton—Furbay-Sommer Electric Co.  
O., Cincinnati—G-E Supply Corporation  
O., Cleveland—G-E Supply Corporation  
O., Columbus—G-E Supply Corporation  
O., Dayton—G-E Supply Corporation  
O., Toledo—G-E Supply Corporation  
O., Youngstown—G-E Supply Corporation  
O., Zanesville—The Roedel Co.  
Okla., Oklahoma City—G-E Supply Corporation  
Okla., Tulsa—G-E Supply Corporation  
Ore., Portland—G-E Supply Corporation  
Pa., Allentown—G-E Supply Corporation  
Pa., Erie—G-E Supply Corporation  
Pa., Harrisburg—Raub Supply Co.  
Pa., Johnstown—G-E Supply Corporation  
Pa., Lancaster—Raub Supply Co.  
Pa., Philadelphia—G-E Supply Corporation  
Pa., Philadelphia—Elliott-Lewis Electrical Co., Inc.  
Pa., Pittsburgh—G-E Supply Corporation  
Pa., Reading—G-E Supply Corporation  
Pa., Scranton—G-E Supply Corporation  
Pa., Williamsport—Lowry Electric Co., Inc.  
R. I., Providence—G-E Supply Corporation  
S. C. Columbia—Perry-Mann Electric Company  
S. C., Greenville—Graves Electric Supply Co.  
S. D., Deadwood—Hendrie & Bolthoff Mfg. & Sup. Co.  
Tenn., Chattanooga—G-E Supply Corporation  
Tenn., Kingsport—Kingsport Electric Co., Inc.  
Tenn., Knoxville—G-E Supply Corporation  
Tenn., Memphis—G-E Supply Corporation  
Tenn., Nashville—G-E Supply Corporation  
Texas, Abilene—G-E Supply Corporation  
Texas, Amarillo—G-E Supply Corporation  
Texas, Dallas—G-E Supply Corporation  
Texas, El Paso—G-E Supply Corporation  
Texas, Ft. Worth—G-E Supply Corporation  
Texas, Houston—G-E Supply Corporation  
Texas, San Antonio—G-E Supply Corporation  
Utah, Salt Lake City—G-E Supply Corporation  
Va., Norfolk—G-E Supply Corporation  
Va., Richmond—G-E Supply Corporation  
Va., Roanoke—G-E Supply Corporation  
Wash., Seattle—G-E Supply Corporation  
Wash., Spokane—G-E Supply Corporation  
Wash., Tacoma—Home Electric Company  
W. Va., Bluefield—Bluefield Supply Co.  
W. Va., Charleston—Virginian Electric, Inc.  
W. Va., Wheeling—Gee Electric Company  
Wis., Appleton—G-E Supply Corporation  
Wis., La Crosse—G-E Supply Corporation  
Wis., Madison—Crescent Electric Supply Company  
Wis., Milwaukee—G-E Supply Corporation